

## CLAIMS

What is claimed is:

- 1) A preform overladding device comprising:
- an injector for providing particles having a predetermined material;
  - a preheater for preheating the particles provided by said injector; and
  - a heater for heating and depositing onto a preform the particles preheated by said preheater.
- 2) The preform overladding device as recited in claim 1, wherein said injector provides particles selected from a group consisting of quartz and silica.
- 3) The preform overladding device as recited in claim 1, wherein said preheater preheats the particles to at least a temperature of 2000° Celsius.
- 4) The preform overladding device as recited in claim 1, wherein said preheater preheats the particles to at least a temperature of 3000° Celsius.
- 5) The preform overladding device as recited in claim 1, wherein said preheater lessens a size distribution of the particles provided by said injector by heating the particles.
- 6) The preform overladding device as recited in claim 5, wherein said preheater evaporates a portion of the particles provided by said injector by heating the particles.
- 7) The preform overladding device as recited in claim 1, wherein said preheater reduces a shape distribution of the particles provided by said injector.

8) The preform overladding device as recited in claim 7, wherein said preheater spheroidizes a portion of the particles provided by said injector.

9) The preform overladding device as recited in claim 1, wherein said heater further heats the particles preheated by said preheater.

10) The preform overladding device as recited in claim 1, wherein at least one of said preheater and said heater is a plasma torch.

11) The preform overladding device as recited in claim 1, wherein at least one of said preheater and said heater is a double enveloped plasma torch using a swirled gas.

12) The preform overladding device as recited in claim 1, further comprising a gas supply for supplying gas to said injector.

13) The preform overladding device as recited in claim 12, wherein the gas is at least one of air, a fluorinated gas and a chlorinated gas.

14) The preform overladding device as recited in claim 1, further comprising a support for performing relative movement between the preform and said heater during deposition of the particles.

15) The preform overladding device as recited in claim 14, further comprising a central processing unit for controlling said support.

16) A method for overladding a preform, comprising the steps of:  
injecting particles having a predetermined material;  
preheating the particles provided during said injecting step; and

heating and depositing onto a preform the particles preheated during said preheating step.

17) The method for overladding a preform as recited in claim 16, wherein said injecting step provides particles selected from the group consisting of quartz and silica.

18) The method for overladding a preform as recited in claim 16, wherein said preheating step preheats the particles to at least a temperature of 2000° Celsius.

19) The method for overladding a preform as recited in claim 16, wherein said preheating step preheats the particles to at least a temperature of 3000° Celsius.

20) The method for overladding a preform as recited in claim 16, wherein said preheating step reduces a size distribution of the particles.

21) The method for overladding a preform as recited in claim 20, wherein said preheating step evaporates a portion of the particles.

22) The method for overladding a preform as recited in claim 16, wherein said preheating step reduces a shape distribution of the particles.

23) The method for overladding a preform as recited in claim 22, wherein said preheating step spheroidizes a portion of the particles.

24) The method for overladding a preform as recited in claim 16, wherein said heating and depositing step further includes fusing together on the preform the particles preheated during said preheating step.

25) The method for overcladding a preform as recited in claim 16, further comprising the step of supplying a gas to an injector.

26) The method for overcladding a preform as recited in claim 25, wherein the gas is at least one of air, a fluorinated gas and a chlorinated gas.

27) The method for overcladding a preform as recited in claim 25, further comprising the step of entraining the particles in the gas.

28) The method for overcladding a preform as recited in claim 16, further comprising the step of performing relative movement between the preform and a heater during deposition of the particles.

29) A preform overcladding device comprising:

injecting means for providing particles having a predetermined material;

preheating means for preheating the particles provided by said injecting means; and

heating means for heating and depositing onto a preform the particles preheated by said preheating means.

30) The preform overcladding device as recited in claim 29, wherein said injecting means provides particles selected from a group consisting of quartz and silica.

31) The preform overcladding device as recited in claim 29, wherein said preheating means preheats the particles to at least a temperature of 2000° Celsius.

32) The preform overcladding device as recited in claim 29, wherein said preheating means preheats the particles to at least a temperature of 3000° Celsius.

33) The preform overladding device as recited in claim 29, wherein said preheating means lessens a size distribution of the particles provided by said injecting means by heating the particles.

34) The preform overladding device as recited in claim 33, wherein said preheating means evaporates a portion of the particles provided by said injecting means by heating the particles.

35) The preform overladding device as recited in claim 29, wherein said preheating means reduces a shape distribution of the particles provided by said injecting means.

36) The preform overladding device as recited in claim 35, wherein said preheating means spheroidizes a portion of the particles provided by said injecting means.

37) The preform overladding device as recited in claim 29, wherein said heating means provides heat to fuse together on the preform the particles preheated by said preheating means.

38) The preform overladding device as recited in claim 29, wherein at least one of said preheating means and said heating means is a plasma torch.

39) The preform overladding device as recited in claim 29, wherein at least one of said preheating means and said heating means is a double enveloped plasma torch using a swirled gas.

40) The preform overladding device as recited in claim 29, further comprising gas supply means for supplying gas to said injecting means.

41) The preform overladding device as recited in claim 40, wherein the gas is at least one of air, a fluorinated gas and a chlorinated gas.

42) The preform overcladding device as recited in claim 29, further comprising support means for performing relative movement between the preform and said heating means during deposition of the particles.

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